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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/032,817

12/27/2001

Gary A. Coen

BOEI-1-1038

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02/18/2005

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EXAMINER

FERNANDES, CHERYL M

ART UNIT

PAPER NUMBER

2163

DATE MAILED: 02/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/032,817	COEN, GARY A.	
	Examiner	Art Unit	
	Cheryl M Fernandes	2163	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is responsive to the Amendment filed October 1, 2004. Claims 1-28 are presented for examination. Claims 1, 2, 15, and 16 have been amended.

Response to Arguments

Applicant's arguments filed October 1, 2004 have been fully considered but they are not persuasive.

2. Referring to the 35 USC 112 first paragraph rejection for claims 2, 3, 16, and 17, Applicant's arguments have been considered but have not been found persuasive. Consequently, the 35 USC 112 first paragraph rejection toward claims 2, 3, 16, and 17 has been maintained.

3. Referring to the 35 USC 112 second paragraph rejection for claims 1 and 15, Applicant's amendments have been acknowledged. Consequently, the 35 USC 112 second paragraph rejection toward claims 1 and 15 has been withdrawn.

4. Referring to the 35 USC 112 second paragraph rejection for claims 2, 3, 16, and 17, Applicant's arguments have been acknowledged and have been found persuasive. Consequently, the 35 USC 112 second paragraph rejection toward claims 2, 3, 16, and 17 has been withdrawn.

5. Referring to claims 1, 13-15, 27, and 28, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., retrieving a data dictionary that includes termed definitions determining lexical nodes of the data dictionary) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

6. Applicant argues that Preston fails to teach determining lexical nodes of the lexical database. However, Examiner disagrees. Preston clearly teaches determining records of a lexical database that have certain terms (col. 12, lines 63-67; Fig. 15b). Examiner respectfully submits that determining records of a lexical database is determining lexical nodes of a lexical database.

7. Referring to claims 4-7 and 18-21, Applicant presents no further argument except that the claims depend from allowable claims 1 and 15. Consequently, the 35 USC 103 rejections for claims 4-7 and 18-21 are maintained.

8. Referring to claims 8-12 and 22-26, Applicant argues that Fayyad fails to teach displaying and determination of an aggregate stability value. However, Examiner disagrees. Fayyad clearly teaches a monitor (col. 17, lines 26-28) for practicing the data-mining engine (col. 16, lines 43-44) and creating an output model from data within

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a database (col. 6, lines 41-47). Fayyad also teaches determining stability of clusters, wherein if every cluster is stable with respect to at least one other cluster then its nearest neighbor search will be well defined (col. 12, line 33 – col. 13, line 67).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 2, 3, 16, and 17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant submits that a valid type dependency is the type of which no caution dependency has occurred and a go icon is displayed. The examiner respectfully submits that the original specification fails to provide for a valid type dependency as defined by applicant. Disclosure in an application that merely renders the later-claimed invention obvious is not sufficient to meet the written description requirements of 35 U.S.C 112, first paragraph. *Lockwood, v. American Airlines, Inc.* 41 U.S.P.Q.2d. 1961, 1966 (Fed. Cir. 1997).

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. Claims 1, 13-15, 27, and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent Number 6,446,081 B1 issued to Preston.

Referring to claims 1 and 15, Preston discloses:

A computer method and system for viewing a data dictionary structure (Abstract), the system comprising a processor (Abstract) comprising:

- a first component configured to retrieve a data dictionary ('stored lexical table', col. 2, lines 57-61; 'lexical database', col. 10, lines 20-24, Fig. 9a, element 234; access of lexical database, Fig. 15b, element 724) including terms ('dictionary entries', col. 3, lines 5-14; 'object', col. 7, lines 1-7; col. 7, lines 21-24, Fig. 7, elements 510, 520) and term definitions ('meaning', col. 3, lines 5-14; 'meaning' field, col. 7, lines 21-25; Fig. 7, elements 514, 524);
- a second component configured to determine all lexical nodes of the data dictionary based on the terms (col. 8, lines 27-43; locate objects of lexical database, Fig. 15b, element 726; col. 12, lines 63-67);
- a third component configured to parse each term's definition (Abstract; col. 8, lines 44-47; Fig. 8, element 610);

- a fourth component configured to determine dependencies of each lexical node based on the parsed definitions and the terms associated with the other lexical nodes ('pointer data' indicates semantic dependencies, col. 7, lines 1-10; 'pointer fields'¹, col. 7, lines 21-32, 'linked from', 'linked to', Fig. 7, elements 518, 519, 528, 529; col. 9, lines 27-37; Fig. 14, elements 662, 664);
- a fifth component configured to generate a lexical graph (Fig. 11a-b) based on the determined lexical nodes and the determined dependencies (Abstract; 'display control data' generated, col. 7, lines 1-10); and
- a display coupled to the processor and configured to display at least a portion of the generated lexical graph (Abstract; col. 1, lines 63-67; col. 7, lines 31-50, Fig. 5b; col. 9, lines 37-42; col. 10, lines 36-51 and 58-64, Fig. 11a-b; col. 10, line 65- col. 11, line 3, Fig. 13; 'semantic dictionary', Fig. 24b).

Referring to claims 13 and 27, Preston discloses modifying at least one definition associated with the terms of one or more lexical nodes, parsing the at least one modified definition, redetermining dependencies of each lexical node based on the previous parsed definition, parsed modified definition, and the terms associated with the other lexical nodes, and regenerating the

¹ The interconnection between objects is derived by the pointer fields thereby allowing the determination

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lexical graph based on the redetermined dependencies (col. 8, line 44- col. 9, line 7; col. 10, line 65 – col. 11, line 19; col. 16, lines 20-30).

Referring to claims 14 and 28, Preston discloses adding a lexical node by inserting a term and term definition; parsing the term definition of the added lexical node; redetermining dependencies based on the previous parsed definitions, the parsed definition of the added lexical node, and the terms associated with the other lexical nodes; and regenerating the lexical graph based on the redetermined dependencies (col. 8, line 44- col. 9, line 7; col. 10, line 65 – col. 11, line 19; col. 16, lines 20-30).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

11. Claims 2, 3, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Preston as applied to claims 1 and 15 above, in view of US Patent Number 6,263, 334 B1 issued to Fayyad et al (hereafter Fayyad).

Referring to claims 2, 3, 16, and 17, Preston discloses:

of dependencies of each lexical node.

- that the determined dependencies are selected from a list comprised of a cyclical type dependency (claims 2 and 16) (col. 18, lines 44-52)²; and
- generating node icons based on the dependency type (claims 3 and 17)('codes' indicating the level of difficulty, complexity or obscurity of each entry in the lexical table, col. 11, lines 31-40)³.

However, referring to claims 2 and 16, Preston fails to disclose that in addition to a cyclical type dependency, the determined dependencies are selected from a list consisting of a valid type dependency and caution type dependency as well.

However, Fayyad teaches a valid type dependency ('stable clusters', col. 12, line 33- col. 13, line 67; col. 14, line 52- col. 15, line 5; col. 15, lines 43-60) and a caution type dependency ('unstable clusters', col. 13, lines 2-59; col. 14, line 52- col. 15, line 42).

It would have been obvious to a person of ordinary skill in the art at the time that the invention was made to modify Preston to further include that determined dependencies are selected from a list consisting of at least one of a valid type dependency, a caution type dependency, and a cyclical type dependency, as taught by Fayyad.

² In this citation Preston discloses a cyclical dependency (as defined in para. 21 of the instant specification) where a determination of a sequence is made wherein event A is expected to cause event B but B is expected to cause A.

The ordinary skilled artisan would have been motivated to modify Preston per the above for the purpose of making sure that data clusters meet certain stability conditions that insure that the clusters are not overlapping in space and so that the conditions enable a database design utility to decide whether indexing is likely to be useful for a given database (Fayyad, col. 3, lines 24-30).

12. Claims 4-7 and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Preston as applied to claims 1 and 15 above, in view of '*A dynamic cluster maintenance system for information retrieval*' by Can et al. (hereafter Can).

Referring to claims 4-7 and 18-21, Preston discloses all of the claimed subject matter as set forth above but fails to disclose:

- determining a lexical stability value for each lexical node (claims 4 and 18);
- displaying the determined lexical stability value with the associated lexical node in a lexical graph (claims 5 and 19);
- determining that the lexical stability value comprises dividing the number of nodes that lexically depend on a current node by the number of nodes that lexically depend on the current node plus the number of nodes that the current node lexically depends from (claims 6 and 20); and
- determining an aggregate stability value (claims 7 and 21).

³ Referring to para. 21 of the instant specification, an icon is defined as a status symbol. Examiner respectfully asserts that a code for each entry in the lexical table is a status symbol.

However, referring to claims 4-7 and 18-21, Can teaches analogous art wherein the following is taught:

- determining a lexical stability value for each lexical node (Abstract; pages 123-130)⁴ (claims 4 and 18);
- displaying the determined lexical stability value with the associated lexical node in a lexical graph (Fig. 1, 2, and 3) (claims 5 and 19);
- determining that the lexical stability value comprises dividing the number of nodes that lexically depend on a current node by the number of nodes that lexically depend on the current node plus the number of nodes that the current node lexically depends from ('centroid entry', page 129, part 4.5 (b)) (claims 6 and 20); and
- determining an aggregate stability value (Abstract; page 127, Section 4.3 till part (e)) (claims 7 and 21).

It would have been obvious to a person of ordinary skill in the art at the time that the invention was made to modify Preston to further include determining and displaying a lexical stability value for each lexical node, furthermore determining that the lexical stability value comprises dividing the number of nodes that lexically depend on a current node by the number of nodes that lexically depend on the current node plus the number of nodes that the current node lexically depends from, and determining an aggregate stability value as taught by Can.

The ordinary skilled artisan would have been motivated to modify Preston per the above for the purpose of judging the effectiveness of a cluster maintenance scheme, that is, for the purpose of enabling new additions to be made into a cluster, while not causing noticeable changes to be made in the original cluster. Additional motivation includes the ability of the clustering strategy of Can to handle dynamic cluster maintenance efficiently and effectively (Can, see page 126, Section 4; Conclusion, Section 5).

13. Claims 8-12, and 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Preston in view of Can as applied to claims 7 and 21 above, and further in view of Fayyad.

Referring to claims 8-12, and 22-26, Preston/Can discloses all of the claimed subject matter as set forth above, however the combination of Preston/Can fails to disclose:

- displaying an aggregate stability value (claims 8 and 22);
- determining that the aggregate stability value of a current node comprises adding the lexical stability values of all nodes that are lexically dependent upon the current node to the current node's lexical stability value (claims 9 and 23);

⁴ A lexical stability value is determined for each document, *m*, in an index vocabulary database by a 'CC Based Cluster Maintenance' algorithm in order to assess stability or similarity characteristics of documents within the database.

- determining a global stability value by summing lexical stability values of all nodes (claims 10 and 24);
- determining a fractional stability value for each node based on the aggregate and global stability values (claims 10 and 24);
- displaying the determined fractional stability value for each node (claims 11 and 25); and
- determining that the fractional stability for a current node comprises dividing the current node's aggregate stability value by the global stability value (claims 12 and 26).

However, referring to claims 8-12, and 22-26, Fayyad teaches analogous art wherein the following is taught:

- displaying aggregate stability values (or probability density values, h_1 and h_2) (col. 6, lines 10-27; Fig. 5) (claims 8 and 22);
- determining that the aggregate stability value of a current node comprises adding the lexical stability values of all nodes that are lexically dependent upon the current node to the current node's lexical stability value ('probability density function (pdf)', col. 9, line 14- col. 10, line 23) (claims 9 and 23);
- determining a global stability value by summing lexical stability values of all nodes ($h_1+h_2+H_{rest}$, where ' H_{rest} ' is the sum of the heights of the curves for all other clusters' (Gaussians G_1 , G_2 and G_3), col. 6, lines 10-40; Fig. 5) (claims 10 and 24);

- determining a fractional stability value (or a 'weighting factor' of the membership of a data point X to clusters $G1$ and $G2$, col. 6, lines 10-40, Fig. 5) for each node based on the aggregate and global stability values (claims 10 and 24);
- displaying the determined fractional stability value for each node (See Fig. 5 with regard to the distance between data point X , $X1$ and $X2$; col. 6, lines 17-40)⁵ (claims 11 and 25); and
- determining that the fractional stability for a current node comprises dividing the current node's aggregate stability value by the global stability value (Refer to discussion of claims 10 and 24 above; the weighting factor of $h1$ to cluster $G1$ is given by ' $h1 / h1+h2+hRest$ ') (claims 12 and 26).

It would have been obvious to a person of ordinary skill in the art at the time that the invention was made to modify Preston/Can to further include displaying aggregate stability values, determining a global stability value, determining and displaying a fractional stability value for each node, and furthermore determining that the fractional stability for a current node comprises dividing the current node's aggregate stability value by the global stability value, as taught by Fayyad.

The ordinary skilled artisan would have been motivated to modify Preston/Can per the above for the purpose of using probability density to decide how data should be

reorganized for efficient nearest neighbor queries (Fayyad, Abstract; col. 3, lines 2-5). Additional motivation would be to a clustered index structure and a statistical model of clustered data in a database in order to determine how data should be partitioned. The model can be used in order that data meets certain 'stability' conditions and that clusters do not overlap. These stability conditions are important because they enable a database design utility to decide whether the indexing method is likely to be useful for a given database (Fayyad, col. 3, lines 6-30).

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

⁵ The distances from data point X to the other points X1 and X2 indicate the fractions of X that belong to

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15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cheryl M Fernandes who can be reached on (571) 272-4018. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on (571) 272-4023. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CMF
February 11, 2005



UYEN LE
PRIMARY EXAMINER